WHAT IS CLAIMED IS:

1. A detecting machine for scanning both sides of a sheet-like object to optically detect compositions of the both sides of the object, the detecting machine comprising:

a first-side light emitting device and a first-side light receiving device disposed closely to each other on a first side of the object;

a second-side light emitting device and a second-side light receiving device disposed closely to each other on a second side of the object; and

an emission controller for controlling the first-side light emitting device and the second-side light emitting device to emit light at respective emission timings different from each other,

wherein the first-side light emitting device is disposed at an opposite position to the second-side light receiving device with the object in between,

wherein the first-side light receiving device is disposed at an opposite position to the second-side light emitting device with the object in between, and

wherein composite detection is carried out to make the first-side light receiving device detect first-side reflected light emitted from the first-side light emitting device and reflected on the first side of the object and to make the second-side light receiving device detect transmitted light emitted from the first-side light emitting

device and transmitted by the object and second-side reflected light emitted from the second-side light emitting device and reflected on the second side of the object, so as to detect the compositions of the both sides of the object.

2. The detecting machine according to Claim 1, wherein the first-side light emitting device and the second-side light emitting device are disposed so that light beams emitted from the respective devices are irradiated into a substantially identical neighborhood region of the object.

3. The detecting machine according to Claim 1, wherein each of the first-side light emitting device and the second-side light emitting device emits a plurality of light beams in mutually different wavelength bands.

4. The detecting machine according to Claim 2, wherein each of the first-side light emitting device and the second-side light emitting device emits a plurality of light beams in mutually different wavelength bands.

5. A validating machine using a detecting machine for scanning both sides of a sheet-like object to optically detect compositions of the both sides of the object, wherein the detecting machine comprises:

a first-side light emitting device and a first-side light receiving device disposed closely to each other on a first side of the object;

a second-side light emitting device and a second-side light receiving device disposed closely to each other on a

second side of the object; and

an emission controller for controlling the first-side light emitting device and the second-side light emitting device to emit light at their respective emission timings different from each other,

wherein the first-side light emitting device is disposed at an opposite position to the second-side light receiving device with the object in between,

wherein the first-side light receiving device is disposed at an opposite position to the second-side light emitting device with the object in between, and

wherein composite detection is carried out to make the first-side light receiving device detect first-side reflected light emitted from the first-side light emitting device and reflected on the first side of the object and to make the second-side light receiving device detect transmitted light emitted from the first-side light emitting device and transmitted by the object and second-side reflected light emitted from the second-side light emitting device and reflected on the second side of the object,

the validating machine comprising a determination validator for validating the object, based on a result of the composite detection, in addition to the detecting machine.

6. The validating machine according to Claim 5, wherein the detecting machine outputs validation signals

from the first-side light receiving device and from the second-side light receiving device,

the validating machine further comprising an operation determiner for determining whether each of the validation signals outputted from the detecting machine is within a tolerance.

7. The validating machine according to Claim 6, wherein the operation determiner makes a determination on whether a first-side reflection validation signal outputted from the first-side light receiving device, a second-side transmission validation signal outputted from the second-side light receiving device receiving the transmitted light, and a second-side reflection validation signal outputted from the second-side light receiving device receiving the second-side reflected light are within their respective tolerances, and

wherein the determination validator validates the object, based on a result of the determination by the operation determiner.

8. The validating machine according to Claim 5, wherein the first-side light emitting device and the second-side light emitting device in the detecting machine are disposed so that light beams emitted from the respective devices are irradiated into a substantially identical neighborhood region of the object.

9. The validating machine according to Claim 6,

wherein the first-side light emitting device and the second-side light emitting device in the detecting machine are disposed so that light beams emitted from the respective devices are irradiated into a substantially identical neighborhood region of the object.

10. The validating machine according to Claim 7, wherein the first-side light emitting device and the second-side light emitting device in the detecting machine are disposed so that light beams emitted from the respective devices are irradiated into a substantially identical neighborhood region of the object.

11. The validating machine according to Claim 5, wherein each of the first-side light emitting device and the second-side light emitting device in the detecting machine emits a plurality of light beams in mutually different wavelength bands.

12. The validating machine according to Claim 6, wherein each of the first-side light emitting device and the second-side light emitting device in the detecting machine emits a plurality of light beams in mutually different wavelength bands.

13. The validating machine according to Claim 7, wherein each of the first-side light emitting device and the second-side light emitting device in the detecting machine emits a plurality of light beams in mutually different wavelength bands.